Hygiene of Alimentation.

Food S.

From Schlossberger & Kemp.

Human milk, 100, of nitrogen contained.
Amount of nitrogen in other foods, as follows:

Vegetable.

Rice	81	White Bread	142	Beans	320
Potatoes	84	Wheat	144	Turnips,	106
Rye	106	Brown Bread	166	Barley	125
Maize	125	Peas	239	Carrots	150
Oats	138	Agaricus delicious	289	Haricot beans	283

Animal.

Human milk	100	Boiled Herring	816	
Cows "	237	" Flounder	954	
Oyster	305	Boiled Pigeon	827	
Yolk of eggs	305			
Cheese	447	" Lamb	852	
Boiled Pork	807	" Veal	911	
" Salmon	610	" Beef	942	
White of eggs	845	Ox-brain, raw,	570	
Boiled Skate	956	Crab, boiled,	859	

N. B. Dr Ed. Smith assents that 1/3 more air enters the lungs under influence of Daylight than under Darkness or artificial light.

How is this U.S. Pettenkofer? Does sleep reverse it?

23
11
12

Schlossberger

Kemp's

Table of Nitrogen in Foods.

Russians more Turkish have tea abundantly.

Servians Rural Spirit-ration

Erbswurst is the German pea-sausage, first used in the Franco-Prussian war; — composed of pea-meal & bacon-fat, seasoned, pressed into skins and boiled. It probably contributed a good deal to the victory of the Germans; and saved a great amount of trouble in transportation, cooking, &c.

Some rye-meal has 15.8 per cent. of protein; lean meat, about 12.8 per ct. wheat has 5% per cent. water; bread, 40 per cent. & milk, proportion of tissue-making material & force-making, about 1 to 2; peas & beans, 1 to 3; oatmeal 1 to 5½; rye, wheat, &c, 1 to 7 or 8.

British Abyssinian war, a war of engineers, in machinery & transportation.

Ashantee war, a doctors war; against malarial disease, Verminized by Sanitary measures

Franco Prussian, in part at least, the Sausage makers or caterers war; also, no doubt, the School masters.

Practical Chemistry and the Arts.

PURE MILK.

BY S. P. SHARPLES, STATE ASSAYER.

As the summer season approaches we shall expect to see the usual number of complaints of poor milk. We have taken considerable interest in this subject, and it has seemed to us that a short statement of what good milk should be will be of considerable interest to many of the readers of the JOURNAL. Various methods have been proposed for testing the purity of milk; they may be classified under the following heads: 1st. The total amount of solids in one hundred parts of the milk. 2d. The amount of curd or caseine and butter that the milk yields on treatment with any substance which will coagulate it. 3d. The amount of butter or fat. 4th. The per cent. of sugar that it contains. 5th. The specific gravity, both before and after skimming. 6th. The volume per cent. of cream. 7th. The opacity which the milk imparts to a given amount of water, or the optical test, as it is called. 8th. Testing by the microscope. We shall treat each of these headings separately, giving the conclusions which have been reached by some of the best chemists in this country and in Europe.

1st. Professor Chandler was employed a year or two since to make an examination of the milk supplied to the public charitable institutions of New York. The milk inspected measured 1,700 quarts, and was the product of twelve dairies. It was a mixture of night and morning milk, thus furnishing probably one of the fairest average specimens that was ever inspected. The average amount of solid matter contained in this milk was 12.55 per cent.

Professor Wanklyn of London, England, a year or two ago made some determinations of the solid matter in country-fed milk, and found it to be 12.45 per cent., a result which very closely approaches that obtained by Professor Chandler. Some determinations of town-fed milk made about the same time gave an average of 14.07 per cent. Muller and Eisenstuck, who conducted an investigation for the Royal Agricultural Society of Sweden, came to the conclusion that the milk of well-fed cows never contains less than 11.5 per cent. of solid matter, and that it seldom falls so low as 12 per cent. Von Baumhauer regards all milk as adulterated which contains less than 11 per cent. of solid matter. Dr. Wagner, in his "Chemical Technology," states that the average amount of solids is 12.524 per cent. Professor Wanklyn has pointed out the fact that milk is by no means so difficult to dry completely as many have supposed. Ten or fifteen grams may be dried completely over a water bath in the course of three hours. Further drying for three hours' time occasions no further loss of weight.

2d. When milk is acidulated with a drop or two of acetic acid and then boiled, almost the entire amount of caseine and butter is precipitated, and the resulting curd may be readily filtered out, washed, dried, and weighed. Professor Hassall gives 7.5 per cent. as the average amount of curd. Professor Chandler found 7.71 per cent. of fat and caseine. Professor Wanklyn found 7.11 per cent. in his first specimen, and 9.02 in the second. Professor White of this city

regards all as adult, wh, has not 8.3 curd.
Butter (Primer) 3.1 to 3.56 per ct.

10 grams of charcoal in powder, evaporating to dryness, and then dissolving out the fat in ether.

4th. The per cent. of sugar is relied upon by Boussingault and Poggiale as affording an accurate test of the purity of the milk. They found 5 and 5.27 per cent. respectively. The sugar is estimated by means of potassio-cupric tartrate in the whey, after the precipitation of the curd by acetic acid.

5th. The specific gravity has been very generally relied upon as a test for the purity of milk, but this is one of the most uncertain of all tests. Hassall, in his work on Adulteration of Food, has shown that this may vary from 1.019 to 1.033, the richest milk showing the lowest gravity. Whey is more constant, and he has depended upon this in his determination of how much water has been added to certain samples of milk. He found the specific gravity of the whey to average about 1.027, and that it did not vary more than one or two thousandths from this number. The sp. gr. of skim milk is always a little greater than that of unskimmed, so that the sp. gr. fails to show whether or not the milk has been skimmed. As a test for adulteration with water, the sp. gr. of the skimmed milk is much more reliable than that of the whole milk. It should not fall much below 1.029.

6th. The volume per cent. of cream is another valuable indication. This may be obtained by placing the milk in a test-tube about six or seven inches long and an inch wide, that is graduated from the top downwards into hundredths. The volume of cream may be read off directly, after it has stood for about 12 hours. Hassall states that the average amount of cream yielded by good milk is 9.5 per cent. by volume, though the extreme cases which he quotes contained respectively 2 per cent. and 84 per cent. Dr. Normandy gives the average amount of cream as 8.5 per cent. Wanklyn found, in the two specimens mentioned above, 9.8 and 13 per cent. Dr. Wagner states that good milk yields from 10.6 to 11 per cent. of cream.

7th. The optical test for milk is a purely empirical one, and consists in adding it drop by drop to water contained in a glass vessel with parallel sides, until a candle placed upon the opposite side of the vessel from the observer can no longer be seen. The amount which has to be added is in inverse proportion to the amount of cream contained in the milk. Each instrument is graduated by actual test with known mixtures of milk and water.

8th. The microscopical test is often of use when all others fail, as it will show whether the milk is in a normal condition, or whether it contains animalcules, etc. It also serves to distinguish milk that is fit to be used, from that given by the cow immediately after calving.

In conclusion, we think that the above statement shows quite conclusively that no single test can be relied upon to show that the milk is free from adulteration, but a combination of several of those given will show pretty clearly the character of the milk.

Pure milk of good quality should possess the following characteristics: —

It should be free from colostrum or animalcules, as shown by the miscroscope. It should have a neutral or slightly alkaline reaction to test-paper. The specific gravity should not vary greatly from 1.029, though this is of minor importance if the cream is abundant. The cream should not fall below 9 per cent. And it should give on analysis about the following percentage composition: —

Water	87.50	
Fat	3.25	Curd 7.50.
Caseine	4.25	
Sugar	4.50	
Ash	.75	

The ash should not exceed the amount given by more than one fourth of one per cent., nor the other ingredients fall more than one half of one per cent. below the amounts opposite to each. And the total amount of solids should not be less than twelve per cent.

For comparison with the above we give four actual analyses of milk.

No. 1 was a specimen of milk procured from a dealer. This is evidently adulterated with water to some extent. It had been carried over rough country roads for some miles, and therefore the cream is somewhat less in amount than the butter found would seem to call for. It is a well-known fact that continued agitation prevents wholly or in part the rising of the cream.

drogen is passed through the silver solution for a considerable time; the contents of the test-tube are then filtered, and the filtrate boiled with sodic acetate until a yellow precipitate of arsenite of silver is produced. The residue on the filter contains both metallic silver and antimon-silver, and must be boiled for 15 minutes with tartaric acid to dissolve the latter; the silver is then filtered out, and the antimony precipitated from the solution by means of hydrosulphuric acid.

In making these tests in cases of suspected poisoning, all the apparatus employed must be new, and the zinc, acid, and water must be carefully tested to see that they are perfectly pure. For complete details of the methods actually employed we would refer to Professor Barker's evidence in the Sherman poisoning case, a report of which was published in the *American Chemist* for June, 1872. In the same number of that journal, Dr. John C. Draper describes his method of determining not only the presence, but also the *quantity* of arsenic by means of a Marsh apparatus.

The reactions for tin, gold, and platinum will be given in our next, together with the manner of separating them from each other and from the above. Suffice it for the present to say, that none of these metals interfere with the detection of arsenic and antimony in the Marsh apparatus.

FAMILIAR SCIENCE NOTES.

Rain in England in 1872. — The rainfall in England during 1872 was 22.59 inches in excess of the averages of the five years from 1860 to 1865. In other words, about twice as much rain has fallen during the last year as in any of the five years mentioned. What the difference really amounts to may be seen by the following calculations made by Dr. Allnutt, the meteorologist: —

"England contains 33,000,000 square acres of land, and an English acre consists of 6,272,640 square inches. An inch of rain on an acre yields 6,272,640 cubic inches of water, which, at 277.274 cubic inches to the gallon, makes 22,622.5 gallons; and as a gallon of distilled water weighs ten pounds, the inch of rainfall on the acre is 226.225 pounds, avoirdupois; but 2,240 pounds are a ton, and consequently an inch of rain weighs 100.993 tons, or nearly 101 tons per acre. For every 100th of an inch, therefore, upward of a ton of water falls. Here, then, we have upward of 2,000 tons of surplus water falling on each of the 33,000,000 square acres of England; or in other words, there have been 66,000,000 tons above the estimated average; and some of our savants have assured us that the springs have scarcely yet begun to flow."

Ammonia in Snow. — The amount of ammonia in snow of different temperatures has recently been determined at Munich by Vogel. Freshly fallen snow at 0°C. furnished water that contained 0.003 gramme to the litre; snow at —3°C., 0.002; and snow that fell at —9° to —15° was entirely free from ammonia. Snow that had lain twenty-four hours on a field which had been manured the previous autumn was found, when melted, to contain 0.012 gramme per litre of ammonia. Other snow that had been for twenty-four hours on the zinc roof of a house had absorbed 0.009 gramme.

The Struggle for Life among Plants. — Each plant endeavors, almost consciously, to destroy his neighbor, to occupy his ground, to feed upon his nutriment, to devour his substance. There are armies and invasions of grasses, barbarian inroads and extirpations. Every inch of ground is contested by the weeds; the forest is a struggle for precedence; the Wars of the Roses are a perennial feud. The serenest landscape, the stillest woodland, are the mortal arena of vegetable and animal conflict.

HOUSEHOLD RECIPES.

Manure for Horticultural Use. — Nitrate of ammonia, 400 parts; biphosphate of ammonia, 200; nitrate of potassa, 250; chloride of ammonium, 50; sulphate of lime, 60; sulphate of iron, 40. These ingredients are pulverized, well mixed, and kept in well-closed dry bottles. Sixty-five grains of this mixture are dissolved in one quart of water, and to each plant (in pots or in open ground) is given weekly a dose of from 400 to 1,200 grains. It is best to pour the liquid in the saucers in which the pots are placed. This is highly recommended by Jeannel, the French horticulturist.

Leather Cement. — According to Stubenrauch, the so-called leather cement is prepared by mixing ten parts of bisulphide of carbon with one part of turpentine, and dissolving gutta-percha in it till the mass appears semi-fluid. The leather surfaces to be united must be freed from grease, which may be done by laying on a rag, and pressing with a hot iron. After applying the above-named mixture, they are exposed to pressure till the cement is dry.

Brine for Pickling Pork. — Persons who have tested the following, commend it as giving the best pickled pork that they have ever eaten: 8 pounds of salt, 2 ounces of saltpetre, 3 ounces of soda, 2 pounds of brown sugar, to each 100 pounds of pork or hams. The meat must be kept carefully under the brine. If this is done, the above will be found to be salt enough for keeping the meat well.

To Clean Cloth. — Grease may be removed from cloth with a mixture of curd soap dissolved in water and oxgall. This should be well rubbed in till spots of grease, etc., disappear. Then sponge over with warm water, to which a little soap and more oxgall have been added. Rinse in clean water, and when nearly dry press with a hot iron on the wrong side. Fuller's earth may be added to the soap mixture for black cloth, and light clothes may be cleaned by merely covering them with a paste of pipe-clay and water, letting it dry, and then brushing it off with a clean brush.

How to Clean the Kitchen Clock. — The following has been suggested as a way of doing this at home: Take off the pointers and the face; take off the pendulum and its wire. Remove the ratchet from the "tick" wheel, and the clock will run down with great velocity. Let it go; the increasing speed wears away the gum and dust from the pinions — the clock cleans itself. If you have any sewing-machine oil, or good sperm oil, put the least bit on the axles. Put the machine together, and nine times in ten it will run just as well as if it had been taken to the shop. If, instead of a pendulum, the clock has a watch escapement, this latter can be taken out in an instant, without taking the works apart.

HOW TO COOK OATMEAL.

We have elsewhere referred to the value of oatmeal as an article of food, and we add here a few recipes for cooking it, which we cull from trustworthy sources: —

Oatmeal Porridge. — Take six tablespoonfuls of meal and soak it over night in a pint and a half of water; in the morning stir it up well, and put the pail into a kettle of boiling water; let it boil for half an hour, as hard as possible; then stir in a cupful of milk and let it boil fifteen minutes. Season with salt, and eat with cream and sugar. If soaked over night, it requires much less cooking. It can also be made without the addition of milk.

Unfermented Oat Cake. — Soak one pint of meal in one pint of buttermilk, over night; next morning add one small teaspoonful of saleratus, dissolved in water, and wheat flour enough to roll out into thin cakes; bake on flat tins in a hot oven.

Oatmeal Breakfast Cake. — Take one pint of oatmeal, a pinch of salt, and just warm water enough to stir it up into a batter, like griddle-cakes. Pour it into a shallow baking-pan, and bake for twenty minutes in a hot oven. Or, if you prefer, bake it in small cakes on the griddle-iron, first putting in a handful of wheat flour and a little more water. The cold porridge will also make delicious griddle-cakes.

Oatmeal Cracknels, or Scotch Bannocks. — Take the finest quality of oatmeal and stir in barely enough water to wet it through; add a pinch of salt; let it stand for ten minutes to swell; then roll it out a quarter of an inch in thickness, first flouring the board and rolling-pin with wheat flour; cut it with a biscuit cutter, and bake in a moderate oven, as these cakes will burn quickly, and only require to be of the lightest brown. They will snap easily between the fingers, and are delicious for lunch, requiring no butter to make them palatable. If put into a close jar, they will keep for several months. In the Highlands they preserve their bannocks in the barrels of oatmeal, and keep them a year or so.

Hygiene of Alimentation.

Food & Drink; — along with these, Stimulants & Narcotics.

1. Manner of Eating — 2. Frequency. 3. Quantity — 4. Nature & Quality of Food.

(1) Eat slowly — & without anxiety.
no violent exercise just before a meal,
Nor just after it; & no study immediately after.
After dinner sit a while.

Times of meals. 7-8 12-2 6-7.
Regular. But, if hungry or exhausted, a bite between. Eat when hungry: even at night; & especially feeble persons. A crumb or a drop in time saves more than nine: A mint-drop in time may save a glass of wine. ~~Sicker.~~ ~~Out of the~~ Sitting up with the sick — take food.

(2) Average quantity daily, 40 oz. solid food, 2/3 veg.; with 20 to 50 fl. oz. liquid. Minimum, 12 oz solid food daily. Maximum, in Arctic climate, 20 lbs fat meat daily. Effect of work — & of sickness, acute & chronic. — Stop when hunger appeased.
~~Out of the sick~~ Starvation, in from 1 week to 3 months!

Requisites of Food.

1. Must contain elements of the body.
2. Must be organic except water & salt.
3. Must be mechanically reducible.
4. Soluble by Digestive fluids.
5. Containing nothing Poisonous.
6. Not offensive to taste or smell (?)

C H O N S P K Na Ca Fe Cl Fl

Dirt-eaters. — Vegetarian question.

Physiol. argument — Chemistry of food — Teeth — Young Birds & meat-land — Milk (Bible) Alim. Canal. — Argument from experience — Chinese, Hindoos &c — & Esquimaux, Norwegians & Fuegians, & Pampan Indians — Common experience & obs. of physicians in Europe & U. States, favoring mixed diet for most people. — Diet of children. —

Class. of foods. 1. Nitrogenous — 2. Oleaginous — 3. Amylaceous — 4. Acidulous — 5. Saline. 6. Aqueous.

Uses of food: for tissue & for force (Liebig's, & late views of source of motor force.)

Nitrog. food-principles.

(2) Albumen — Vegalbumen — Proteyon &.

(1) Myosin — Fungin — Neurin

(3) Casein — Legumin — Globulin

(4) Fibrin — Gluten — Chondrin & Gelatin

Need of antiseptic preservation of Nitrog. foods

Smoke, or — Cold — Salt, vinegar, Sugar, Spices, Nitre — glycerin — charcoal — sulphites —

Exclusion of air — (paraffine &c)

Fatty foods: olein, palmitin, stearin, butyrin, &c. Uses: for fat tissue, — for combustion — Perhaps for cell-formation — probably, a little, for assimilation. Cod liver oil.

Instinctively used all over the world, Cow's butter, buffalo's butter, ghee in India, olive oil in S. Europe, Palm oil in Africa, Seal's or bear's fat among the Eskimaux, &c.

Amylaceous Group.

Starch
Gum
Dextrin
Sugar
Cellulose
Lignin
Sclerogen

Starch Roots.

Wheat Starch
Potato "
Corn "
Arrowroot "
Sago "
Tapioca "
Canna &c

Sugars

Cane
Sorghum
Beet
Maple
Date-palm

Sugar of Milk
Mannite
Liquorice Sugar
&c.

Glucose
Fruit-Sugars
Honey
Starch

Starch — $C_{12} H_{10} O_{10}$

Gum $C_{12} H_{11} O_{11}$

Cane Sugar $C_{12} H_{12} O_{12}$ — Beet — Sorghum — Date — maple — maize

Grape Sugar $C_{12} H_{14} O_{14}$ — Honey — starch s. — fruit sugars (Tolivaud! ? toxic.)

Sugar / Milk $C_{24} H_{24} O_{24}$?

(Lactic Acid $C_{12} H_{10} O_{10} + 2HO$)

Cellulose $C_{12} H_{10} O_{10}$

Lignin $C_{12} H_8 O_8$

(or — Sclerogen — $C_{35} H_{24} O_{20}$)

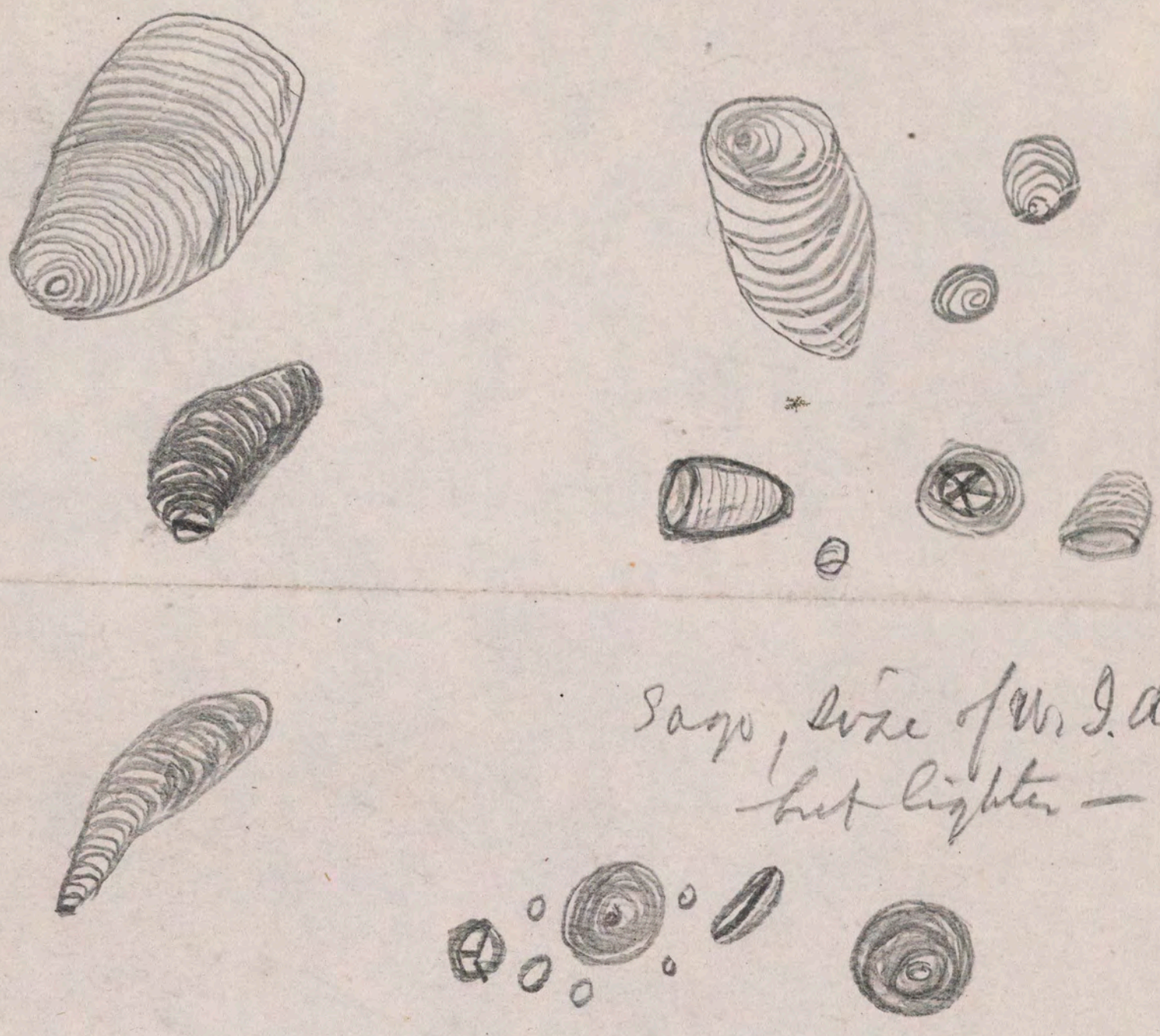
Lignin in nuts, skins, peel, cobs, bran —

Pectin Pectic acid —

in apples, pears, quinces, berries, cherries, oranges, tomatoes, & onions, carrots, beets, turnips

Acidulous — Anticorb. &

Saline principles —



Sago, Rose &c. M. D. A. R.
Lot lighter —

Dr Hartshorne

1701 Gilbert

Sugar

Kinds — Formula. — changes —

Varieties —

Cane - sugar -

Orgn — East Sacch,

W. Ind. & Louisiana —

Cane 12 & 22 p. c. sug. —

Of ½ kept as sugar 6 per c. from cane —

Process - pressure - lime chlor. - boiling - Drain

Refining - clay - blood - &c - Syrup -

molasses most impure sacch —

brown sugar next — cane — earth - accr

sweet —

(white sugar may be adult. - (Harvell)

Beet s. — Europe — (6 or 7 per ct) -

maple — millions of lbs - Canada - N.Y, N.E., Ohio.

March - 2 mo's - 1 lb per tree - sap first not sweet -

Sorghum — → maize — Date palm (Jaggery)

Grape sugars — 345 in sw. — less sol. & less chryst.

Raisins —

Honey — (Fr. brizard tonic! — + emphm dis —)

Fruit sugars — (not made)

Starch sug. — SO_3 — or malt —

Diabetic sugar — (glycose from glycogen)

diet of diabetics — cabbage — meat & Brambread — Campher

Mannite — (except liver)

Liquorice sugar — (other chem. sugars)

Glycerin not a sugar

General wholesomeness of sugar — teeth — children — stomach sours —

adulterations of sugars

Starch

Highly important nutrient — (pyramid) — (abundant in grains — roots — fruits — canes — stems of plants)

Varieties of starch — Potat, Wh., corn, arr. r, Sag., tap, tous, sassa

Adulterations of Sugars

Brown sugar —

Cane fragments — acari — Spores of fungus — (microscope) — grape sugar — (Trommer's test) — earth — Water — clammy — &c

White Sugar

Flour — microscope — starch — ~~Potato starch grape sugar~~

Marble — chalk — (especially pulverized) insoluble ash

Adulteration of arrowroot,

with potato or wheat starch (microscope)

In England) Sago meal (microscope)

Starch not
alone enough
test for tissues

(Burnt in per cent
nitrogen test with KO)

Babies food

Acidulous foods; or rather ingredients & auxiliaries or condiments.

Vinegar — Pectic acid — Malic (in apples, pears, quinces, berries, cherries, oranges, tomatoes, onions, carrots, beets, turnips.) Citric & Tartaric acids, chiefly.

Antiscorbutic apparently.

Raw food sometimes wholesome.

Saline foods: necessary.

Chloride of sodium — & of potassium — phosphates carbonates — sulphates — of calcium, sodium, potassium

How do they act? Probably as chemical agents favoring metamorphosis of substance.

Then, actual food-substance.

First, Milk.

Important facts not appreciated by everybody:

1. Starch alone repairs no wasted tissue unless fat, & is insufficient nourishment, for babes or men.

2. No one of the 3 sorts of alimentary substances, albuminous, starchy & fatty, will alone long sustain life.

3. Every few days, health requires some uncooked food (it need not be much) as celery, salad, radishes, fruit, &c. Milk, unboiled, is raw food, and will do unlimitedly, if necessary. It is the only perfect food.

Milk.

Model natural food.

Perfect food. Compos. — (30 ingred. (corpuscles & fluid) Ca Sec lactin butyr. Salts —)

Sust. life indef.; tho' not enough alone for hard work, adult.

for old people, without teeth (?).

Helps diet of adults: — very good.

~~Kinds of milk~~

~~(See ~~Notes~~ Notes).~~ 1

Qualities of Milk —

Protoplasmic food:

Milk, eggs, seeds, fruits, blood.

Even potato, Rhizomes —

Changes in milk:

1. Cream rises: being lighter — should be in c's 8 parts (about) = 100.
2. Casein begins to decompose — {acid when fresh, & later}
3. Lactin or sugar of milk splits into 2 lactic acid.
4. This coagulates the casein — curdles,
5. Sours fully & sports. {for a delicate infant, milk may be sterilized, i.e. rendered unsuitable, before curdling or souring.}

Deteriorations of Milk:

1. Stall-keeping of cows.
2. Bad feeding of "
3. Unhealthy selection of them.
4. Staleness of milk: — long carriage — heating & mixing 2 days;
5. Removal of cream. 2 cows, no matter.
6. Adding of water.
7. other possible adulterations: salt, chalk, starch, &c —

Signs of deterioration.

1. Smell & taste — (before curdling) —
2. Lactometer — Gerrometer (? use of word) — 8½ per cent cream
3. Hydrometer — 1028 — 1026 minimum 1034 maximum
4. Donné's lactoscope —

(→ Now to (1))

(11)

Milk.

[1]

(next, [2] ↑

Doyere

	Cow's	Ass'	Goat's	Ewe's	Woman's	Woman's
Casein	4.48[2]	1.82	4.02	4.50[1]	1.52	Cas. .34
						alb. 1.30
Butter	3,13	0.11	3.32	4.20[1]	3,55[2]	— 3,80
Sugar	4.77	6.08[2]	5.28	5.00	6.50[1]	— 7.00
Salts	0.00[2]	0.34	0.56	0.68[1]	0.45	.18
Water	87.02[2]	91.65	86.80[4]	85.62[4]	87,98	87.38
Total	100.00	100.00	100.00	100.00	100.00	100.00
Solids	12.98[3]	8.00[5]	13.20[2]	14.38[1]	13.00[4]	

Ewe's most Casein, butter, & salts; Woman's most sugar, next, that of the ass;
Most solids in all, ewe's; next, goat's; third, cow's; fourth, woman's; last, that of the ass.

Mare's milk used by the Tartars; buffalo's & camel's, in Arabia, Syria & Egypt.
I have drunk the milk of the buffalo on the Nile – greater its butter; which is white & with little taste.

When, then the mother cannot give nourishment to the child — what is next best?

Certainly, the like nourishment from another parent — a wet nurse.

Next care is the choice — Dr. S. Rogers' verses.

Moral as well as physical

Consideration — Milk is from blood.

(Instances: Soldiers wife — 2. the mother of 18 children, her temper violent — all died but one — not nursed — primipara — age — 20 & 35 —

2d child nurse better than Health — 2. female temperaments

Differences: — 1. Idiosyncrasies — 3. time since birth of child — 4. Food & medicaments — 5. Nurse — 6. Hygiene — Exercise — Bathing — Rest — Sleep — Position — Dress — Ventilation — Warmth — Cleanliness.

After Jacoby Bouchut — & "writer of
Rome in the time of the Cæsars" —
French experience with nurses. — Vide the nurse-child question of Paris
dead

But, ill mothers should not nurse —
for their own sake as well as the infants' —
to the child
Less difference than we would think —
but still not right —

1. For acute disease, as pneumonia, typhoid &c —
2. For debility —
3. For phthisis, syphilis — & other marked
constitutional affection —

Are they to transmissible? — Doubtful,
but —

tion of infant wants, and an accurate estimate of infant powers of digestion, there is no reason why a child fed artificially, with judgment, should not thrive as well as one suckled naturally at his mother's breast. The food we select for the diet of an infant should be nutritious in itself, but it should also be given in a form in which the child is capable of digesting it, otherwise we may fill him with food without in any way contributing to his nutrition, and actually starve the body while we load the stomach to repletion. No food can be considered suitable to the requirements of the infant unless it not only possess heat-giving and fat-producing properties, but also contains material to supply the waste of the nitrogeneous tissues; therefore a merely starchy substance, such as arrowroot, which enters so largely into the diet of children, especially among the poor, is a very undesirable food for infants, unless given in very small quantities and mixed largely with milk.

The most perfect food for children, the only one, indeed, which can be trusted to supply in itself all the necessary elements of nutrition, in the most digestible form, is milk. In it are contained nitrogeneous matter in the curd, fat in the cream, besides sugar, and the salts which are so essential to perfect nutrition. The milk of different animals varies to a certain extent in the proportion of the several constituents, some containing more curd, others more cream and sugar; but the milk of the cow, which is always readily obtainable, is the one to which recourse is usually had, and when properly prepared this is perfectly efficient for the purpose required. Cow's milk contains a larger proportion of curd and cream, but less sugar, than is found in human milk, and these differences can be immediately remedied by dilution with water and the addition of cane or milk sugar in sufficient quantity to supply the necessary sweetness. But there is another and more important difference between the two fluids which must not be lost sight of. If we take two children, the one fed on cow's milk and water, the other nursed at his mother's breast, and produce vomiting directly after a meal by friction over the abdomen, we notice a remarkable difference in the matters ejected. In the first case we see the curd of the milk coagulated into a firm dense lump, while in the second the curd appears in the form of minute flocculent loosely connected granules. The demands made upon the digestive powers in these two cases is very different, and the experiment explains the difficulty often experienced by infants in digesting cow's milk, however diluted it may be, for the addition of water alone will not hinder the firm clotting of the curd. In order to make such milk perfectly satisfactory as a food for new-born infants, further preparation is required, and there are two ways in which the difficulty may be overcome.

The first method consists in adding an alkali, as lime-water, to the milk. To be of any service, however, the quantity added must be considerable, and one or two teaspoonfuls—the addition usually made to a bottleful of milk and water—is quite insufficient to effect the object desired. Lime-water contains only half a grain of lime to the fluid ounce; of this solution so small a quantity as two teaspoonfuls would be scarcely sufficient even to neutralize the natural acidity of the milk. But it is necessary to do much more than this. Lime-water, no doubt, acts by partially neutralizing the gastric juice—the rennet naturally existing in the child's stomach—so that clotting of the curd is in great part prevented, and the milk passes little changed out of the stomach

to be fully digested by the intestinal secretions in the bowels. To attain this object at least a third part of the mixture should consist of lime-water. For a new-born infant two tablespoonfuls of milk may be diluted with an equal quantity of plain filtered water, and then be alkalinized by two tablespoonfuls of lime-water. This mixture, of which only a third part is milk, can be sweetened by the addition of a teaspoonful of milk-sugar. If thought desirable a teaspoonful of cream may be added. The whole is then put into a perfectly clean feeding-bottle, and is heated to a temperature of about 95° Fahr. by steeping the bottle in hot water; when warmed it is ready for use. The proportion of milk can be gradually increased as the child gets older.

There is another plan by which the caseine of cow's milk may be rendered digestible; it is by adding to the milk a small quantity of some thickening substance, such as barley-water, isinglass, or even one of the ordinary farinaceous foods. The action of all of these is the same, and is an entirely mechanical one. The thickening substance separates the particles of curd, so that they cannot run together into a solid lump, but coagulate separately into a multitude of small masses. By this means the curd is made artificially to resemble the naturally light clot of human milk, and is almost as readily digested by the infant.

Although any thickening matter will have the mechanical effect desired of separating the particles of curd, yet it is not immaterial what substance is chosen. The question of the farinaceous feeding of infants is a very important one, for it is to an excess of this diet that so many of their derangements may often be attributed. Owing to a mistaken notion that such foods are peculiarly light and digestible—a notion so widely prevalent that the phrase "food for infants" has become almost synonymous with farinaceous matter—young babies are often fed as soon as they are born with large quantities of corn-flour or arrowroot, mixed sometimes with milk, but often with water alone. Now, starch, of which all the farinæ so largely consist, is digested principally by the saliva, aided by the secretion from the pancreas, which convert the starch into dextrine and grape-sugar previous to absorption. But the amount of saliva formed in the new-born infant is excessively scanty, and it is not until the fourth month that the secretion becomes fully established. Again, according to the experiments of Korowin of St. Petersburg, the pancreatic juice is almost absent in a child of a month old; even in the second month its secretion is very limited, and has little action upon starch. It is only at the end of the third month that its action upon starch becomes sufficiently powerful to furnish material for a quantitative estimation of the sugar formed. Therefore, before the age of three months a farinaceous diet is not to be recommended—is even to be strongly deprecated, unless the starchy substance be given with great caution and in very small quantities. If administered recklessly, as it too often is, the food lies undigested in the bowels, ferments, and sets up a state of acid indigestion, which in so young and feeble a being may lead to the most disastrous consequences. In fact, the deaths of many children under two or three months old can often be attributed to no other cause than a purely functional abdominal derangement, excited and maintained by too liberal feeding with farinaceous foods. There is, however, one form of food which although farinaceous is yet well digested even by young infants, if given in moderate quantities. This is barley water. The starch it contains is small in amount and is held in a state of very fine division. When barley-water is mixed with milk in equal proportions it ensures a fine separa-

FEEDING YOUNG CHILDREN.

The Boston Board of Health gives the following advice about the feeding of infants in hot weather:

"As a rule, until a child has its eight centre teeth it should receive no food that does not consist entirely or mainly of milk. Breast-milk is better than cow's milk, and the mother's milk superior to that of a wet-nurse. Observe regular hours for feeding. When overheated or fatigued, never nurse a child Until the child is six weeks old, feed it at intervals of between two and three hours during the day, and every three hours during night. After this gradually lengthen the intervals between the meals, so that, by the time the baby is four months old, it shall be fed every four hours during the day, and if necessary once during the night. Do not consider that every time a child cries it is necessarily hungry. In hot weather, or if the child is feverish, allow it to drink freely of cold water. If the mother has not breast-milk sufficient for the child let the child be fed twice a day with the bottle. A flat bottle, its open mouth covered with a black rubber nipple, is all that is required. Complicated nursing-bottles should never be used, owing to the difficulty which will be found in keeping them properly cleaned. At first equal parts of milk and warm water should be used, with the addition of half a teaspoonful of sugar, if the child will not take it without. The quantity of food thus prepared for a meal should not at first exceed a sixth of a pint. As the child grows older the amount of water added should be lessened, and the sugar should be altogether omitted. By the time the child is four months old it should have pure milk, which in very hot weather need not be warmed. Immediately after using the bottle, always scald it thoroughly. The rubber nipple should be kept always in cold water when not in use. In very hot weather a little soda should be added to the water with which the bottle is washed, and also to that in which the nipple is kept. The best milk is obtained by allowing the can to stand about an hour after receiving it, and then pouring off for use the upper two-thirds. In very hot weather the milk which has thus been poured off should be at once boiled. It is also well to add, during the extreme heat of the summer, especially if the child is at all troubled with diarrhœa or vomitting, a teaspoonful of lime-water to each two teaspoonfuls of milk. If the child is to be brought up by hand, it should be fed with the bottle, as described above, and at the same time as if nursed. If pure milk cannot be obtained, condensed milk may be tried. It should always be kept in a cool place, and is best prepared by adding one teaspoonful of milk to six tablespoonfuls of boiling water. As the child grows, the strength of the mixture should be increased. All prepared varieties of so-called infant's food are to be avoided, unless especially ordered by a physician. There is no proper substitute for milk."

more sugar and fat than normal cows' milk, and much less caseine, we can readily understand what the effect of such milk must be upon small children fed upon it. The amount of caseine being great, the curd of the milk is increased, and the digestion made more difficult. * * *

"In order to make such a milk agree in composition, even roughly, with woman's milk one and one-half quarts of water must be added to one quart of milk and then cream and sugar added to supply these ingredients, for, after the water to dilute the caseine, the mixture would contain about one-fifth the necessary quantity of sugar and about one-fourth the necessary fat, to say nothing of the normal inorganic salts. It must be remembered that those milkmen who keep cows have a large demand for one cow's milk to supply food for small children, and consequently this milk is more likely to be given to children than to

specific gravity of butter fat at 15.5° *is not* 900; but about 927.5. This is the figure found by Mr. Wynter Blyth (*Analyst*, Vol. V., p. 76) as the result of direct experiment, and in close agreement with it, namely 928.3, is the gravity which can be calculated from Mr. Wigner's Table on the ratio of expansion of Butter Fat (*Analyst*, 1879, p. 184). The depression in specific gravity is therefore not 1, but only 0.725 for each per cent. of fat. The difference between these two figures is a serious one, and Clausnitzer and Mayer's formula must therefore be rejected as incapable of giving reliable results.

As Clausnitzer and Mayer's factors are calculated from the results of numerous analyses, it follows, as their factor for the minus gravity of the fat is too high, that their figure for the plus gravity of the solids not fat is also too high. These two errors may, and as will be seen from the results given below, frequently do, counterbalance each other, yet when the ordinary balance between the different milk constituents is disturbed, the calculated results differ materially from those found by experiment.

To ascertain the factor s, I have made a series of analyses of milk, bestowing the utmost care upon every step. In all cases about 5 grammes were evaporated, the residue dried for *at least* four hours in the water oven, and after weighing extracted for *at least* two hours in a Soxhlett tube with pure ether, the exhausted residue being again dried at 100° for one hour. I have previously shown that under these conditions variations in the results are reduced to a minimum.

The specific gravity was also determined with the greatest possible accuracy. I found that much better results were obtained by means of a Sprengel tube (*Chem. Soc. Jour.* [2] 11, p. 577) holding about ten grms., than by the use of the specific gravity bottle. Extremely minute air bubbles remain suspended in milk for a considerable time

(1)

1. What to nourish infants with —

a. the mothers milk

b. wet nurses —

Milk: (notes)

Consider

Pt 2

Bronchitis

Pneumonia

Measles

Whooping cough

Influenza

Scarlet fever

Diphtheria

Mumps

Chicken pox

Rubella

Smallpox

Typhoid

Dysentery

Tuberculosis

Malaria

Tetanus

Poliomyelitis

Encephalitis

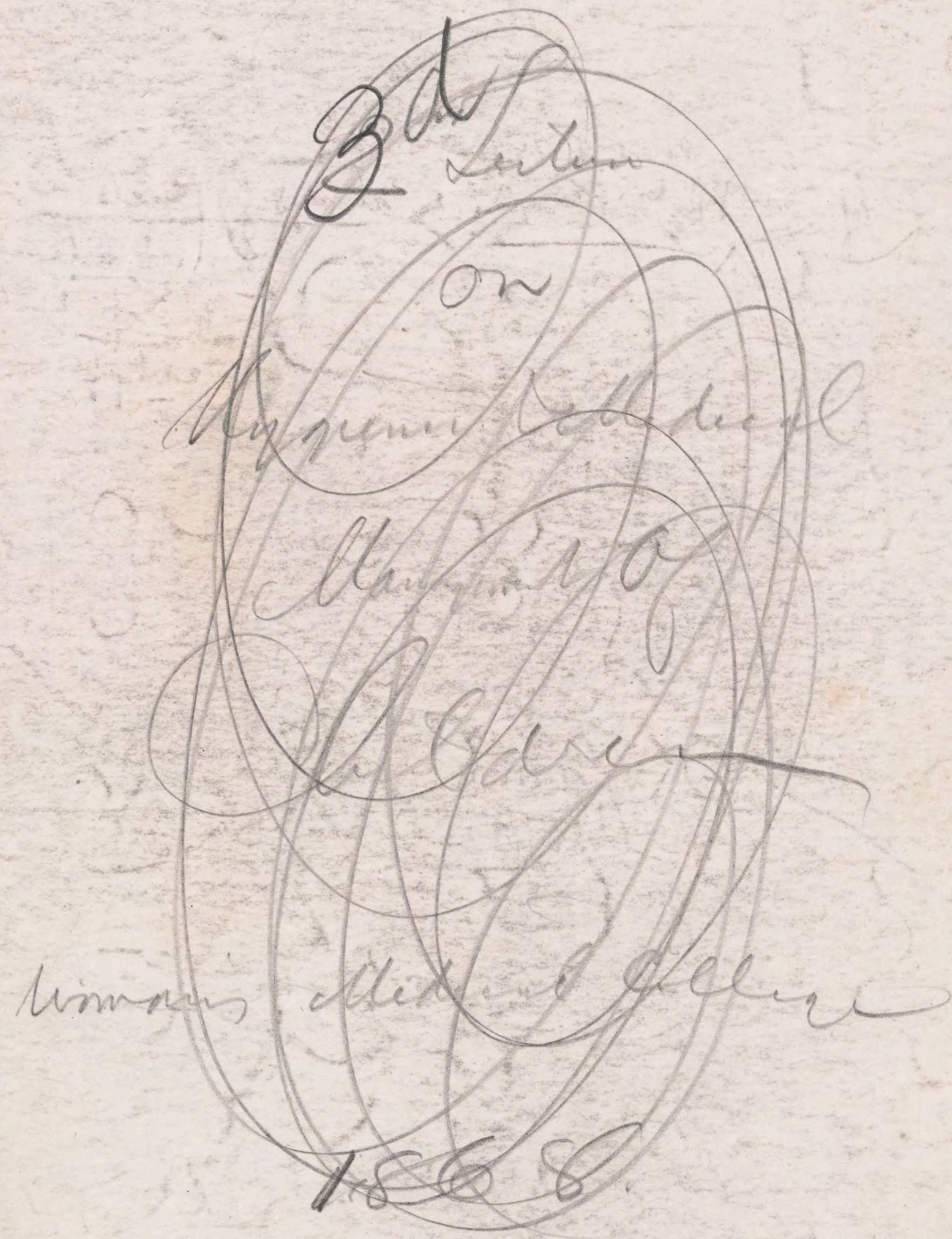
Meningitis

Rabies

Tetanus

Tuberculosis

Malaria



(2)

Cows Milk for a babe under 3 mo's should
usually directed to
have as much (some say three) water
added — a little white sugar — Combe says 1/3 water.
1 mo.?
After 3d mo — gradually increase
amount of water: at 6 mo's use
equal parts pure milk — Dr Corson of Montgomery Co. Pa.
says none: he may be right.
Certainly many infants have suffered from being under-fed.
It must be warm when given.
Expert nursing
If digestion be [illegible] make the nurse-
-bottle slow, or less quantity, add barley water.
If diarrhoea, boil the milk; when
do so always in hot weather
with sour stomach, so rejected by vomit,
(and remember that can spill over — & don't
mind curds in rejected milk - so, digestion
add lime-water — one or two tablespoonfuls
to a pint — Safe; perhaps bone-making?
If costive, — add oatmeal gruel, then — Barley gruel
If appetite deficient, vary, — with arrow-root farina Rice gruel

General Purposes of Food — See my Hygiene Notes

1. For tissue
2. For heat & force — —

General principles of dietetics —

Under childhood alimentation —

after that infancy;

See My Hygiene Lecture —

Good meat, - qualities (Letheby):
1. Neither pale pink (chronic) nor dark purple (acute disease).
2. Marble-veined with fat. 3. Not wet, but firm.
4. Little odor, none unpleasant. 5. Shrinks little on cooking.
6. Acid reaction of juice. 7. Few infusoria under microscope.

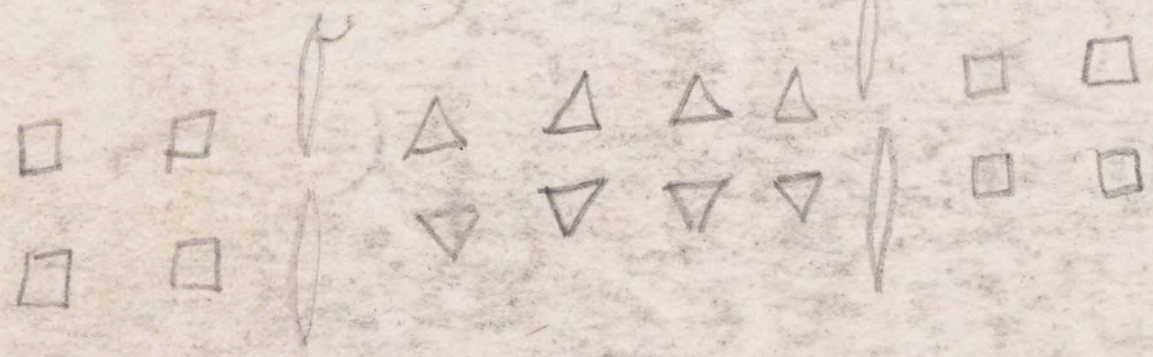
When Mothers milk abounds,
an important period is that of weaning:— to be done gradually—
first at night —

Not necessary, with healthy mother, before ^ 2 years —
quite the usual before end of 1st year.
18 mos or even

Indian Squaws, e.g — that long —
Mixed diet, maternal & simple of table, ^
Last year does very well —

Sudden weaning for mothers illness
sometimes unavoidable — always ^ at some risk
of child's health —

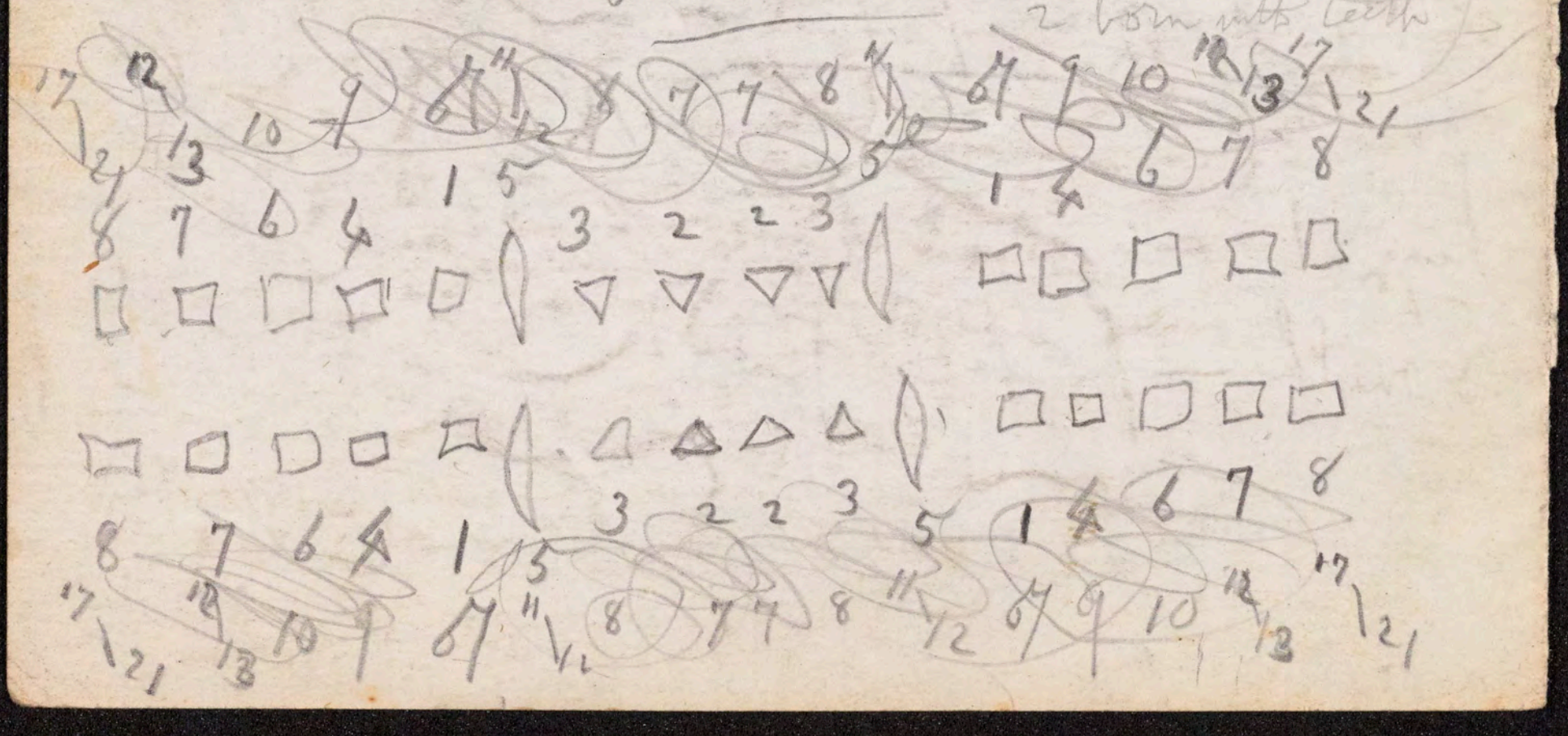
~~Beefsteak soup~~ It is a good plan from 4th to 7th mo
begin to accustom it to other food — first bread
& milk — for fear of sudden need of change —
Not even till canine teeth all cut —
Then between teeth spells — interval of repose
of system.



with deviation!

upper teeth first

2 born with teeth



(Boiled milk) —

Milks

Cows — Human — Asses' - Ewes' Goats

Mares — in Tartary —

Buffalo's — ~~Asses~~ — White butter —

Eggs - albumen (casein) fats, salts

Meats —

Uses of all br. for. kingdom unless Rabbit

Proteids, meaning

Brahmin —

Beef —

veal

Mutton

Lamb

Pork

Ham —

Rabbit — Squirrel

Venison —

Buffalo —

Wild

Birds — weaker than mammals — often tender & delicate —

Chicken, turkey — duck, goose,

Pigeon — partridge - grouse (prairie hen)

Wild ducks — (geese)

Dark meat, white meat —

Black specks -

Taenia (cysticercus cellulosus)

Trichina — if encapsuled, white specks

Game most generally

digestible & relishing —

DR. HENRY HARTSHORNE,

LATELY PRESIDENT OF HOWLAND SCHOOL,
UNION SPRINGS, N. Y.,

Will be prepared, 9th mo. (September) 25th, 1878, to receive a few young ladies to reside in his family, and a larger number as day scholars, for advanced instruction. Competent Teachers will attend, for Latin, German, French, and Drawing. There will be one school session daily, closing at 2 P. M.

Residence, S. W. corner of Shoemaker's Lane (Penn Street) and Wakefield Street, Germantown; five minutes walk from Shoemaker's Lane Station, on the Germantown Railroad.

TERMS: Boarding Scholars (per annum), $375; French and German, each, $25; Drawing, $25. Washing, 75 cents per dozen. Day Scholars: English Studies, with or without Latin, $80; French and German, each, $25; Drawing, $25. Those (either boarding or day scholars) who take both French and German, or one Modern Language with Drawing, will be charged $40 for the two branches. Drawing, French, and German *together*, $50. Payment in advance; one-half in 9th mo., 1878, and the remainder in 2d mo., 1879.

Scholars will be entered only for a year; in case of unavoidably prolonged absence on account of sickness, one-half the charge will be deducted for the time of absence.

Physical culture will receive constant attention; the aims of the School being *health*, *development*, *character*, and *culture*.

Address,

DR. H. HARTSHORNE,
GERMANTOWN, PHILADA.

[omitted, 1875-6; Milk as conveyer of Typhoid fever.

Condiments – Pepper, Mustard, Spices.

use, & limits; principle of economy of stimulation (climate, season, debility &c)

Beverages,

Stimulants

& Narcotics.

See Note Book.

Tea (custard) gluten starch

& arrowroot ords

Don't boil it, but have
water always boiling when applied.

~~for April 25th~~ (10th) (1)

Constituents Of Tea.

Theine; 1 per cent. ~~3½ to 6~~ ? Substit- ~~6~~ per cent.

Volatile Oil; 1 per cent. maximum.

Gluten; 20 & 25 per cent.

Tannic Acid.

Starch, Gum, Fat, &c.

Coffee.

Caffein; 3/4 per cent. ~~Minimum~~.

Volatile Oil & Empyreumatic Oil.

Gluten; 13 per cent.

Astringent principle, like Tannin.

Fat and Extractives.

Over

Cocoa.

Theobromin.

Volatile Oil, chiefly empyreumatic.

Fat (cacao butter) 56 per cent.

Starch.

Gluten, a coneiderable amount.

Other Infusions used as Beverages.

Coffee-beans — Java

Maté — V (Ilex Paraguayensis) — Paraguay

Guarana — Northern S. America

Grape-vine leaves in Central Europe —

Catha Edulis (Chaat) in Abyssinia

Myrtaceæ in Tasmania

Ledum palustre, & latifolia — Labrador —

Effects of Alcoholic Excess.

Delirium Tremens

Gout

Chronic Alcoholismus:

Cirrhosis of liver — Fatty degeneration of heart — Atheroma of arteries — Bright's Disease of kidneys &c

Methomania

Other Insanity

Impaired health of Offspring.

Strength of Wines.

Per cent. of Alcohol by Volume.

Port	16.6	to 24
Sherry	16	25
Madeira	16.7	22
Marsala	15	25
Bordeaux Wines & Clarets	7	18
Burgundy Wines	7.3	14
Champagnes	5.8	13
Moselle Wines	8	13
Rhine wines	6.7	16
Hessian Rhine wines	10.2	15
Hungarian Wines	9	15
Italian Wines	14	19

Spirits.

Brandy	50	60
Whiskey	50	60
Gin	49	60
Rum	60	70

Strength of Spirits.

Brandy — 50 — 60 per cent. alcohol.

Whiskey — 50 — 60

Gin — 49 — 60

Rum — 50 — 60 — 77.

Chances of Living.

	Temperate	Intemperate
At 20 =	44.2 years	15.6 years
30 =	36.5	13.8
40 =	28.8	11.6
50 =	21.25	10.8
60 =	14.285	8.9

Sep. 226 Orchard

Popular Narcotics.

Tobacco
Opium — Grains of Paradise
Hascheesh — Long-Pepper
Betel-Nut — Amanita
~~Lupulin~~ Laughing Plant.

Foreign Beverages.

Malays, &c,	Arrack,	from Rice, or Areca.
Greeks, &c	Raki,	Rice
Hindus	Toddy,	Cocoa-nut Palm
"	Mirwa,	Millet
Arabs &c	Booza,	Millet
Russians	Quass,	Rye
Poles, &c	Vodki	Potato
Chinese	Sumshu	Rice
Japanese	Sacie	Rice
Feejees	Ava	Long Pepper
S. Americans	Chica	Maize
Mexicans	Pulque	Agave
"	Aguardiente	"
W. Indians	Guarapo	Sugar Cane
Tartars	Koumiss	Mares Milk.

Universality – Tea, Coffee, Cocoa –

England, Holland & Russia, Canada, Japan, Java, consume principally Tea; besides Asiatic countries, Egypt, Ceylon, France, Germany, Sweden, Turkey, Coffee; Italy & Spain, Centralamerica, Cocoa or chocolate;

Half the human race drink Tea — 500 millions —

½ to 2 per cent of Theine in Tea

10 gr in ounce good Tea,

Not much, isolated, injurious; but

poisonous effects on the nerves by Tea

Tea nourishing also.

Nomad Tartars get out the gluten (20 & 25 per cent) by long boiling of the dry leaves in their alkaline water, the steppes of Asia — add salt & fat. With milk & a little roasted flour they drink thus 20 or 30 cups daily in their wanderings

In some forest Siberia, they eat the leaves boiled & the Dutch

Yerba,

Mate, or Paraguay tea,

leaves of Ilex Paraguayensis,

contains theine also; 1¼ per cent of

and a volatile oil, gluten and

an astringent principle.

It is used by the greater part of

the population of South America.

Coffee, Caffee or Cafta is drunk by

the inhabitants of Java. Its qualities

effects most resemble those of the

Chinese tea plants

Abyssinian tea (Chaat) leaves of

Catha edulis) shrub 12 ft high

Tasmania tea, leaves of plants of

family Myrtaceae —

Labrador tea — 2 species Ledum palustre

& latifolium

Coffee, more of a ganglio-spinal stimulant
" cerebro-spinal
Tea, more

Coffee, —

Probably more than 100 mill. use it.

In Europe alone it is estimated that

200 mill. of pounds are annually

drunk. Mocha best — the Java.

Roasting coffee alters its

Qualities & an Constituents

An empyreumatic oil is

not quite identical with it

So produced, but like the volatile oil in

which its Basis is Disengaged by heat.

Liebig's rule; boil 3/4 roasted

add 1/4 un-roasted.

Injected — Caffeine a little less

than in tea, 2 volatile, much

less than in tea (a tea 1/100 part coffee 1/5000

but different & more potent in qualities.

3. An astringent principle different from tannin

& some fatty matter, & glutin in

less amount than tea, ½ as much

Effects of coffee — Boisseville

Narcotic — antisoporific — excitant.

Lehmann experiments — (not all caffeine.

Has to supply the

Use, — in undressed Cover
- worked ——— accom. / food strength
Injury to well people —
Dyspeps — palpitas — apoplexy
nervousness ———

I can not accomd R —
many 907 - Dio Lew[3] — Hammond[2] - Parera[1]
of greatest value for
Emergencies — Ship wreck —
Arctic explorn —
In army campaign life
Soldiers best friend
Reserve it for use, I should say,
Substitutes —— chicory — dandelion
acorn wheat, rye & little stimulant
chicory adult, known by colouring cold-water & not
being green with perils of sea, as coffee would

A Russian lady student (1875) told me that Quass ("sour drink") is dead & effervescent, but not regarded in Russia as containing any alcohol. Piwo is weber, ütel does contain alcohol

Cocoa or bean / Theob. Cac. small
Apetalous tree / S. amer & W. Indies. — Two species
chief. chocolate the old
Mexican names

The fruit is a pod or melon with
a number of seeds or beans —
Modes of preparing Whole bean roasted, heat or
ground to paste in hot water, &
mixed with starch & sugar
and shaped / husks, & crushed
into fragments: cracked cocoa; best.
3. Shelled, ground to paste by hot
rollers, mixed with sugar, vanilla
cinnamon, cloves — chocolate
Many secondary preparations — known as

In cocoa — 4 chief products by roasting —

2. theobromine, very near nitrog. than theine or caffein —

3. fatty matter — (cocoa butter) large amount — 56 per ct —

4. Starch 5. gluten large amount —

Nourishing — tonic heavy — not very stimulant —

Coca — Erythro. Coca — Von Tschudi

Accounts — Hunt — D. Osborne & Waddell

Coqueros

Conclus. — Prof. Jackson —

under side ^ midrib — & ⟨ parallel lines near it —

Coca contains 1. an odorous resin — 2. an unemployed bitter principle, composition not known; partially nitrogenous 3. Tannic acid.

Coca chewers (10 millions of people

Arsenic - cats - Strychnine -

Alcohol -

1. Potency & importance —

2. Compos — possibility of adapting food — for tissue ? — proved for a whole organism For force, — why not ? like the carbo-hyd. not strength respiration

3. obvious effects — 4 stages: exhilaration stupefaction

Effects of excess: delirium tremens — gout — alcoholism = organic degeneration.

1. Prove by induction

2. Interpretare în cuvinte

3. "a rezolva ... cu ajutorul ..."

4. Comentarii

From Neison's "Vital Statistics."

Ordinary average rates of deaths from Disorders of the Head, Digestive Organs (including Liver & death from all causes) and Respiratory Organs — from 49.1 to 56.39.

In intemperate lives — less than 55 — 73.38.

Chances of Living.

A Temperate person's,		Intemperate,	
At 20	= 44.2 years	=	15,6 years.
30	= 36.5 "	=	13.8 "
40	= 28.8	=	11.6 "
50	= 21.25	=	10.8 "
60	= 14.285	=	8.9 "

Average Duration of life after becoming intemperate is, among

Mechanics and laborers —	18 yrs
Merchants and traders —	17 "
Professional men & Men of leisure —	15 "
Females —	14 "

These must be high estimates.

4. Modus operandi of alcohol

1. Stim. appetite circulation &
2. Hypoesthetic 3. Inebriant—
brain, in small doses— 4. Narcotic
or oppression in large— Important
difference (Acetic— dosage)

4. Lowers temperature of the body,
5. Lowers muscular power (Metamorph.— as
shown by) & thus decreases
excretion— CO2 & urea—
well?—

Two sorts of Metamorph.—

Actinic— use Drug of organs—

Passive— slow decay or waste—

the former, stimulants increase with.
The Latter may be, thus) excessive
then retardation useful Diuretic.

Do in Disease all natural (Nerv—
agent in alcohol; burns, hemorrhages, exhaustion
typhus, consumption

Stimulation

Effect on temperature.
Effect on muscular strength; action of the heart.

Alcohol appears to act as accessory food, or simple stimulant, when given in quantities which, under the circumstances of the body at the time, can undergo Oxidation. In typhous fever, e.g., no delirium follows; — instead, delirium is arrested by it. It does not, in this case, show its presence in the body by the odor on the breath (apart from the mouth odor for a few minutes only) It lowers the temperature in prostrating fevers. Expl: ——

Steps of access, in Drunkenness: 1. flush — 2. quicker pulse — 3. effect on the head. Either short period or reduces its dose.

Danger of intemp. increases as period with greater frequency of the use of it — Hence especially the need and of Spirit-drinking.

1. In certain diseases all physicians give alcohol
(not in all) Eg as, bad burns, hemorrhages, typhus, consumption (late)

Alcohol ever prop
in health? No; but return
in health Disease the question.
Teetotalism

2. Can Attend,
Therapeutics & Physiol, argument against it. —

3. Is poison accepted modified
food

t^

Subseq. depress. from disproport. to the
excess — (all is excess in health)

(X Rays conclusion)

(Below par — underfed — overworked —
aged — anaemic

Does it intrinsically promote alcoholism? — No. — But from Excess.
Danger 1. quant. — 2. freq. — 3. time of day.
~~Signs of excess — 1. flushy — 2. pulse 3. obriety.~~

Essential importance of dosage. Hygienic doses.

Intemperance & Dis-ease: Methomania ("dipsomania")

Hard to cure easy to prevent

2 classes should be teetotallers always
even when ill; & old topers — & Hereditary

Effects for Inebriates

1 or 2 Years

(national habits — S. Europe — G. Britain, Dutch, France
America water-drinkers. wine-cultures.

Alcoholic Beverages

1 — 10 per cent. 5 — 25 per ct. 50 per ct.

Beers — Wines — Spirits —

Lager 6 ale 8 average 15

ferment with yeast or be — Sponta. ferments — Distilled

Theory of fermentation —

Sugar absorbs oxygen & converts into alcohol & Carbonic acid.

Beer — mostly from barley-malt

Grain allowed to begin germination, in a dark room —

So Starch converted into Sugar — } both soluble
gluten " " Diastase }

At the proper moment, drying stops the sprouting —
Then bruised & put with water at about 160°
into a tun or vat —

Diastase now converts more starch into
dextrin & then grape sugar —
1 lb Diastase for 100 pounds starch in
good malt — Could act on 6000 lb — stand
& more is sometimes added —

Boiled next — to stop action of diastase
add the hops & clarifyers of albumen &c
Then cooled down to from 54° to 64° to ferment
for six or eight days —
Lager slower at lower temperature.

Mycoderma or Torula Cerevisiæ

Saccharomyces Cerevisiæ

always appears, a Microscopic Org.

— cells, 1/50,000 of an inch as first —

afterwards elongated. Nature of the

connection it has with fermentation

unknown; cause, consequence or

coincidence? Pasteur thinks behind the cause.

Ingredients of beer —

1. Alcohol —

Small beer — 1 — 1½ p.c. by weight

Porter 3½ — 5½

Brown stout 5½ — 6½

Strongest Ales 5½ — 10 —

By volume 1/4 more —

2. Sugar —

3. Gluten Cellulose as Diastase Nitrog

4. Salts 13 gr. to pint — Mineral solids 4.48 p.c.

5. Lupulin — bitter — Tonic & Soporific.

Free acid — 30 gr. to pint — acetic, carbonic, tannic, lactic, malic.

quite key 12 gr. to pt

Beers are nourishing then —

should be clear —

not very bitter

not acid to taste.

Generally the best alcoholic beverage for

Convalescents & people below par —

Gout comes from excess in porter

& exercise —

Ale ages with most details —

stronger than porter —

Porter colored by browning some of the malt —

or adding burnt sugar —

less complicated often & digester —

Lager — mild & if pure may suit the

for those who need N — but will intoxicate

Adulterations —

Carb. soda to lessen acidity —— Sulphuric acid, to clarify & age —

Red pepper? Cocculus Indicus — Sr. of Par. (Amomum Melegueta) sort of Cardamom

Strychnia? no. (Hassall), (Parkes)

Other than malt beers —

1. Maize beer — Chica of S. America
   anciently used — by malting — or
   chewing — chica masicada!
   made in company, fresh, — or kept old!
   Rationale — ptyalin the diastase —
   Similar — in Feejee Islands, — Ava or Cava
   from root of long pepper — Macropiper Me-
   -thysticum — Ceremonial about the
   Kings ava daily, - the first event —
   chica, also, in S. A., from rice, peas, pineapples &c.

2. Bouza (Mursa) Millet beer of the
   Crim Tartars — Boozeh from Poa Abyssinica
   Arabs & Many African tribes — old and, boozy?
   Lactic acid abundant in Millet beer,
   Himalayans suck mursa thro' tube: S. amer. Sc Parag. tea:
   not so far apart! — Sherry Cobbler —

X A Russian lady med. student (1875) told me that Quass ("sour drink") is an acid effervescent beverage made from rye, — considered not alcoholic, Pivo is rye-beer, which does contain alcohol.

3. Quass ~~Piva~~ Rye beer, in Russia; made without malting —

4. Koumiss or Mare's milk beer of Tartary — Lactic its acid — Arabians & Turks do a Milk beer —

Wines — Spontan. fermentation. (Pasteur organisms on skins)

— Grape juice will ferment w/ air whereas warm water —

Cider — from apple juice — malic acid its characteristic — easily becomes sour — apple flavor odor — 9 per ct alcohol assays — extra often added to keep it — Astringent —

Perry — pear juice — seldom made — Same ingredients & qualities — Grape sugar

Mead ? a wine ~~or a beer~~ ?

Grape juice

Wine varies with.

Variety of grape — Riesling &c —
Catawba — Isabella — Columbia, Delaware, Diana, Concord, &c
Climate — Rather warm — on hill-sides —
Soil — most of our states warm enough — California —
only one place Johannisberger — or Steinberger
Season — Like sea-island cotton (for East) —
Culture — varies at same vineyard —
Time of gathering — matter of skill —
Mode of fermenting — & temperature —
Keeping — Skins added most for red wines —
rosso & bianco —

Some wines improve with age — not all;
if they do not spoil they all grow in quality —

(Constituents of Wine —

1. alcohol — (Table) —

2. Grape sugar — (dry wines least —

Order — Tokay - 7½ gr. in oz, Malmsey 6 - Port 16
& 34 — Champagne 6 & 28, Madeira 6 to 20 - Sherry & 20.
Claret, Burgundy, Rhine & Moselle little or none.

Best Sparkling Wines
(by analysis) have
Per bottle
16 to 18 grammes sugar;
$\frac{11}{100}$ to $\frac{12}{100}$ volume alcohol
Uncombined acid to
correspond with 3.5 grammes
Sulphuric acid.

3. Acetic acid — Racemic, tartaric, acetic, malic (sometimes citric, if unripe) tannic, carbonic, &c

order of acidity — fatty acids —

4. Ethers, — Oenanthic, pelargonic;
1 part in 8000; also others, corresponding
to above acids. — " Bouquet. "
also an undetermined odorous agent peculiar.

5. Salts — Bitart. potas. — tart. of lime &
soda — sulph. potas. — phosph. of magnesia
&c.

Sherry least acid; then Port, Champagne,
claret, Madeira, Burgundy, Rhine wines,
Moselle most acid —
Port most tannic acid —
— now v. sour & Ethers above —
&c —

More nourishing than beer — not
so soporific nor so tonic — more exciting —
Equally gouty — though Gattegout in Rhine region.

1. Adulterations of Wine —

Waters —

Spirits —

Lime salts —

Logwood in Port — Catechu &c

Cider — Perry —

Evaporation & dregues leave the peculiar odor —

Wine antiscorbutic — Lind observed this Long ago — confirmed Frank & English army & navy —

Culture of the grape & keep manufacture Maine Growth for the Temperance cause, in my opinion — to lessen spirit drinking —

BATH

Other various beverages —

1. Guarana — W. Indies — Sugar Cane juice

2. Mescal — Maguey plant, Agave Americana

Rh. one — 10 yrs — flow st. cut out.
sap flies — carry — 8 & 15 pints daily
for 2 or 3 mos — Pulque —
becomes sour — (propylamin? no —
no trimethylamin —)
Est found & it honors. —
Aguardiente from it — Mobile

3. Palm wine in Asia Africa & South America — much used —

Spirits — Distilled —

Brandy — 50–60 p.c. alcohol
grape

Whisky 50–60
barley, maize &

Gin 49–60
Grain, malt
Juniper &c

Rum 60–77. &c, &c, &c —
Molasses —

Brandy contains Oenanthic & other ethers.

It is astringent — has a little tannin
perhaps from cask. — or ~~ether~~

Rum, butyric ether —

Whiskey Irish & Scotch,
peat smoke taste —
less in Bourbon & Monongahela —

Often useful & necessary in
disease — ruled out in health.

(See Parkes. p. 229 &c) — Nelson's Tables — Carpenter &c

Action on Stomach, Liver, Heart, Respiration, Muscles, Metamorph
Elimination — it goes through much unchanged (if excessive) — aldehyde.

Cold climates — Explorers — Tropical — Engl. in India & W. Indies
Fatigue — Malaria — Yellow Fever — Cholera.

Mary — Mary — Alexander, Elizabeth, Mary, Mary, Mary

Quantity of Alcoholic Drinks

consumed in G. Britain (Johnston)

& Ireland. — 25 million gallons Spirits, U. Kingdom annually —

England per head 3 1/9 gall. } Ireland 1 1/2 gall. - Fath. Matthew!
Scotland " " 2 7/9 " } (Johnston expl.)

Other Spirituous Drinks in remote Lands

Arrack - Malays & Hindus - Rice or Areca nut

Raki - Greeks & Turks - Rice

Toddy Hindus = Cocoa nut Palm

Vodki - Poles & Russians - Potato Spirit

Mexicans Aguardiente, Pon Pulque or Maguey Wine —

Tobacco —

Cannabis Indica
Hascheesh

Opium

Minor narcotics.

Betel-nut (Areca palm)
Macropiper Methysticum
Er. of Pandiac (Amomum Malaqueta)
Amanita Muscaria,
Kola or Sterculia Nut, W. Africa
Lettuce — lactucarium

Tobacco:— not eaten, but—

in ~~Consumption~~ universality,—

next to salt ——

30 mill. pds a Gr. Britain alone, spite of duty—

wonderful fascination for millions:

King James — C: Blast —

Pope Urban 8th — bull —

In Russia, knout & death in vain —

Priests & rulers in Persia & Turkey forbad it

as an unholy thing — but the Turk &

Pers. greatest smokers in the world.

In China every female, after 9 yrs, needs

a pipe & tobacco pocket —

A Turk or a Arab seldom goes

far from home without his pipe —

New dignity here now of late given on

Gen — because Ex-Gen Grant is an

inveterate Smoker ——

Origin of the Plant—

American — or? Pallas versus.

Indians smoked before Columbus—

Nicot took it to France, — & Lisbon

the honor of its name,

Sir F. Drake & Raleigh to England

Spread astonishingly! all over the

world; its culture as well as use,

as far as climate allowed,

Besides our continent (Asia, Africa &

Oceanica all produce it, & U. S.

as far North as Connecticut; and a staple

of some states farther South than us.

An exhausting crop, poisons, & the

soil,

Species — Several ? 40!

Two well recognized at least.

Nicot. rustica, — & tabacum.

Virginia & central & Southern India,

tabacum; Northern India Western

China) & Syria Smaller; & Persia probably

another ^ species, — Persica.

Best in the world —

1. Latakia, (Laodicea) Syria —

2. Island Luzon, Philippine Islands,

Manilla cheroots —

+3. Cuba — finest Havana Cigars.

Ingredients: 1. vol. oil 2 gr. in 1lb got in drying;

2. Nicotin, — nitrog. alkaloid, volatile; 3.

empyreumatic oil, Empyreumatic, — less volatile.

Effects of Tobacco.—

In small quantity, undiluted tannic, — & empyreumatic.

In Large Dose — a dangerous, or fatal Sedative poison; nauseating Prostrating like Lobelia. —

Modes of use —

Chewing — Smoking — cigar or pipe — short pipe Long — Hookah, Narghile — water — Porous Meerschaum &c — pipe best — Snuff — "Dipping" —

Effects of the habit — Plethora and Nervousness, Dyspepsia, Palpitation, Paralysis — General — But, if a habit, a cigar the most innocent.

Minor Narcotics.

Betel-nut of areca palm - India
chewed -

Macropiper Methysticum - (ava)
chewed & S. Sea Islands also
Kola or Goora Nut, W. Africa (has theine)
Ex. of Paradise (Amomum Melegueta
- grains
Coast of Guinea - spice then for food -
part of English tea formulas -

Amanita Muscaria of
Siberia & Kamskatka -

Hemp - one potion
for a week's effect; or - 5 persons
in succession!

Opium -

From Lotus 65

Opium —

Old use — Papaver —

Source — capsules of Poppy

grown in the East — Turkey opium the best.

Constit. — a number of alkaloids,

which morphia, codeia, narcotin & thebaia at

least are narcotic. —

Modes of use — chiefly,

Chewed or smoked in pill by Mahommedans;

Smoked by Buddhists, of China &

Drunk, in laudanum by Christians.

China 5 Million lbs
Gr. Britain 1/4 lb

Extent of Use — Quantities —

200 gr. opium = chloral

20 gr. morphia (Nott). Effects [physiol. fatal

2 stages — 1. cheerful mental not

(ansie) — violent

2. stupor — Fits & blows

Sweat, strength under fatigue.

Hallucinations — Fantastic dreams — & horrors —

After depression — Hard & slow — Delirium

Effects habitual — Stoppage of gut, yellow face

Well after Harvey. Sunken eyes indigest. & constipation

In its favor: — No N. ought except as medicine.

Even in cases to infants — an abuse. — Lettuce. —

Last — Hasheesh / 2 or 3 hundred Millions use it.

Name — "weeds" —

Assassins in Syria — Hemp —

Plant — Resin — by extract

by alcohol or butter Ethers, — used.

Effects) variable — fantasia —

appeals sensorial exaggeration &

susceptibilities — (In haveem)

after depression less than

after Opium — But undoubted &

not in use here or

in Europe except as Medicine;

its variable Effects when natural

its employment are so much.

3/5 9/15

2/3 10/15

Food

Drink

Stimulants

&

Narcotics

THE COCA OR CUCA LEAF AND ITS EFFECTS.—The alleged use of this plant by Mr. Weston in his great pedestrian feats, has brought the subject before the medical profession of England, and Mr. Robert Christison and Mr. G. F. Dowdeswell have furnished some interesting facts on the properties and action of the leaf. The early history of Peru, says Mr. Christison, informs us that Cuca was used in Peru at the time of its conquest by the Spaniards. Pöppig, a German naturalist who lived in Peru for five years, after observing the habit of chewing the Cuca leaves by the inhabitants, came to the conclusion that its use is as seductive and injurious to the health, mind, and morals, as drinking or opium eating. Its victims lie in the open fields dreaming beautiful dreams, remaining out all night indifferent to cold or rains. In the end, however, the stomach gives way, the face becomes haggard, and the victim dies of all sorts of maladies. Other authorities think that the accounts given by Pöppig are much exaggerated. Dr. von Tschudi, in his visit to Peru, found it relieved the difficult breathing which is felt in ascending eminences. He thought that the moderate use of Cuca might be conducive to health. Without it, the poorly-fed Peruvians Indians would be incapacitated from performing their labor. The plant from which the leaves are obtained thrives best in the elevated forests of the Andes. In time it is covered with delicate white flowers, which are succeeded by red berries. The leaves can be stripped from the plant three times a year, and are at once thoroughly dried. When the packages of Cuca are opened, they emit a powerful tea-like odor. Mr. Christison has tried the effects of the leaves upon himself. He has taken long and fatiguing walks, living at the same time after his usual manner; then he has repeated the walks for even greater distances, and when overcome with fatigue, at some resting-place, he has chewed thoroughly, and swallowed eighty grains of Cuca. No real effects were observed until he went out of doors and resumed his rapid walking; then all sense of weariness disappeared, and he could walk, not only with ease but elasticity. At the end of the walk the pulse was 90; and in two hours fell to 72. At dinner-time there was neither feeling of hunger nor thirst, after abstaining from food for nine hours; but upon dinner appearing, ample justice was done to the meal. No unpleasant effects were felt the next day. Mr. Dowdeswell, in an article in the *Lancet* for April 29th, 1876, has the same idea as to the great and wonderful powers of endurance gained by its use.—*British Medical Journal*, April 29th, 1876.

THE ENGLISH DEBATE ON SYPHILIS.

IV.

In contrast with the admirable contributions of Sir Wm. Jenner, the remarks of Dr. Moxon are noticeable for their tedious prolixity and their sophistical character. We must express both our surprise and disappointment at this effort of a man, who, by his writings upon visceral syphilis, has heretofore commanded our highest respect. In fifty-six observations of visceral syphilis, he had found the average period of life to have been thirty-seven years, and his experience had taught him that in such cases the prognosis was not good, as the future of such patients was a short one. He differed from Mr. Hutchinson's view as to the non-specific nature of tertiary lesions, and considers that the necessity of mercury for a total cure of them proves them to be related to the secondaries. He emphasized the admission of the orator that the want of symmetry of tertiaries was really due to the condition of abundance; and considered that this, in truth, conceded the relation of both classes of lesions. While he agreed with Sir Wm. Jenner that the lesions of typhoid fever were very rarely symmetrical, he did not consider that the comparison offered by Sir James Paget, that such sequelæ of this disease as the suppuration of one rib or of phlebitis of one vein, applied at all to the distribution of tertiary syphilitic lesions. He believed that these latter lesions were often symmetrical, and cited instances of such, the most noticeable of which was that of a gumma involving each root of the vagus. He alluded to the fact that such diseases as pityriasis versicolor and trichiniasis, well known to be unconnected with blood taint, were frequently symmetrical. He further differed with Mr. Hutchinson as to the theory of the possible relation of the secondary and tertiary lesions, which we have explained in a previous number, and advanced the hypothesis that perhaps the latter attacked tissues which had not been affected by the former. In sup-

Reptiles -

Green Turtle — Terrapin — Snapper
rhinoceros among

Frog — Iguana —
chicken like

Lizards in S. Amer

Fish — everywhere eaten — Pescados —
Weak — not sufficient alone — tho more
phosphates than land meats —
Good for variety —

More subject to unwholesomness than other
meats — Nile — Wood-fish — a kind of
small herring — but some 180 species —
Salmon (shad) after spawning —

Idiosyncrasies — watermelon — rasp-
-berries — so with fish be — Short Boon.
Shad — Salmon — trout — rock-fish — sheepshead &
Halibut — fried cod nice — Salt fish inferior — horrid

Articulate animals used for food

Lobster — & Crab —

wholesome if fresh — should be alive

here — & not eaten out of time or in excess.

Locusts in the East —

In Vienna, beetles cooked —

In Australia also, ants, served up alive —

Molluscs

oysters & clams —

mussels sometimes —

others in Great Britain

& the continent near the sea

oysters very digestible usually —

Am. oysters best

& nourishing — clams less so —

the soup best —

Lalande the astronomer fond of spiders

Darwin mentions one sort of caterpillar as delicious —

Chilton in N. Am. at centipeds

Western Locusts ("grasshoppers" —

Caloptenus spretus) were eaten with relish

by Prof. Riley the entomologist & others, 1875.

Curiosities of National Diet 4

In Africa, monkeys are eaten
in S. America, monkeys, alligators &
lizards.

Italians eat insects called in English
Cockchafers —

Eggs in England, hedgehogs
Col. Frontt with Indians, dog-meat
in foreign markets sometimes the same, or cats-
Horse-meat now recognized as allowable
in Paris & oth European cities — Scenk. French
Tartars also horse-meat —
Ancient Romans, snails — & (Pompeii) rats
Chinese rats, earth-worms, & swallows nests
Shetl. Islanders wont eat crabs lobsters — Lower classes
in England abhor venison & other game, poached to sell — Austra-
-lians wont eat oysters — S. Sea islanders refuse milk
S. American natives prejudiced against turtle —
Irish domestics often object to Indian corn —

Cooking of meats

Boiling — stewing —

Roasting — Baking — frying —

(Broiling &c modifications of these

& stew

Boiling softens most — but makes the meat

Best for feeble digestion —

If to keep strength, put in boiling water

If to tender through — first in cold —

Roasting — for flavor & full

strength — or nearly so —

Different in Baking — not so good —

frying is grease the worst

Emphyreumatic products —

Apply to poultry as well as butcher meats

BATH

Tenderness a great point
too much neglected here

Paris cookery — learning? or
science? Probably both —

American cookery better than
English —

Oyster cookery —

Raw best digestible — roast excellent —
stewed — steamed — pan'd — fried?

Theory of cookery — to begin
with —

Digestion — Man is an animal who
cooks his food — also to improve
flavors —

Raw beef for tabès —

(Opium sometimes)

Blood? Usually cut in kills —
Mexican — potable reasons —

~~(Soups & Jellies thrown)~~ (7

Liquid animal food —

Soups — too thin —

Chicken soup best for sick —

often excellent —

Beef Essence — to make it

Beef tea ! — Don't filter —

Beef 2 processes for making it —

(Chambers don't filter beef tea)

~~Beef~~

Mutton essence

Oyster broth 7 similar —

Put up Beef teas — Valentine's —

~~Liebig's~~ Liebig's Extract —

Stimulant rather than food ;
its salts important.

Valentine's — Johnston's.

Oyster soup for invalids —

Turtle soup —

Unwholesome Meat

Spoiled — smell taste &c

as they usually do in food — animal

instinct —

Senses ~~checks~~ artificial sometimes —

Appears like high meat — preservation

Some keeping longer meat — freezing

Sausage Poison — Vienna & Berlin

Diseased — not so often as one

would suppose — but always unwhole-

some, safe; over-driven, unwholesome; acute diseases, drain blood;

chronic wasting diseases, bad; ep. pleuropneu., doubtful; malig. pust., cerebral;

typhus, uncertain.

Poisoned — Pasteur pro — certain

beings, &c — rare —

Parasite-infested — measly pork-

tænia (cysticercus) echinococcus (new) trichinæ —

Preservation of Meats

Ice — Brine — Drying — Smoking — Salting (already) —
previously used

Sugar — curing — Exclusion of Air

(Appert) in sealed cans —

Morgan's injection pickling

Put pipe into left ventricle, — connected by ~~indiarubber~~ tube with tank of brine a few ft above. When blood has been driven out by right auricle, the end is [Parkes' meat biscuits p. 214 —] closed, the pressure forces the brine throughout.

This brine is 1/4 lb (or 4) nitre, 2 lb sugar, a little spirit salts, & 1/2 oz phosphoric acid.

[For soldiers or explorers — Make concentrated meat extracts, &c, into thick broth soups; or else they consume ~~wasted~~ at once naturally, without being filled enough]

Vegetable food substances Next.

(12×14 album — 50×75 stand — salts

Cereal grains: Wheat, rye, buckwheat, oats,
Barley
Rice Indian Corn —

↑ Flour

Bread — theory of raising & baking —
Unfermented aerated bread —
Principal Faults of bread — Heavy
Sour
Bitter
Mouldy

Bran —

Rye — Buckwheat — Oats —

Rice — Corn —

Potatoes — &c
White & Sweet —

Peas & Beans —

Tomatoes — Squashes — Beets — Turnips —
Carrots — Cabbage — Asparagus — Onions — &c

Fruits — fresh, wholsome as a rule —
(Cholera-time even) — Peach — Apple — Orange —
Strawberries &c —
Cherry — Pineapple —

Vegetable Foods

Bread, the "staff of life" — & the "Cereal grains."

Qualities of good wheat flour: best shown in the baking; white, with tinge of light yellow; not lumpy; lumps giving way on pressure; not gritty; when compressed in the hand, shows well the finger-prints; thrown against a wall, some sticks.

Adulterations: Alum, chalk, gypsum, potato-meal.

Rationale of raising & baking bread:

Faults of bad bread: Sour; bitter; heavy; mouldy; saline, from excess of soda or salaeratus &c.

Brown Rye — Oat-meal — buckwheat — Indian Corn — rice —

Other vegetables — potatoes &c;

Scurvy — symptoms causes, prevention;

Fruits: wholesome as a rule; Cholera season no exception.

Comparison among fruits: Peach, orange, apple, grapes, pears, cherries, pine-apples, &c.

After vegetable foods

Diseases connected with Food

Excess — Indigestion — colic — diarrhoea — cholera morbus — dyspepsia putrefying masses — even absorp. of fetid matter — & peptohæmia, hetæromia

If absorbed, excess of nitrog. food may cause congest. & enlargements of liver, & plethora — : & Gout — espec'lly if exercise be deficient — even without alcohol though does not often unless hereditary

Hammond found excess of albumen alone in 5 dogs caused fevers, malaise, diarrhoea; at last, albuminuria —

Excess of starch generally passed by bowels —

Excess of fat, indigestion — liver disturbance — cutaneous irritations —
~~dyspepsia & dyscrasias~~

(2

Defect of food —

Atrophy, starvation; wasted aspect

in France — hunger — pain — weakness

loss of appetite — fever — delirium — diarrhoea

& colliq. sweats with foul odour of

all excretions — hyp. death — 10 days & 20

Insufficiency of albuminates —

debility — low nutrition — tubs &

Scrofulous affections — phthisis &c

tho these not certain or uniform

Rheumatic diathesis?

is producible —

Defect of fatty food, or pitch

thought favourable to phthisis —

Curry — defect of fresh

vegetables — with rice proved — cant

stay ruby or hom as wet Cold fatigue, help.

or man of war, 1 gallon each
per diem. ½ for Cooking purposes—

Water.

See Note-Book.

On man of war (Ethan
1 gallon each man — th for
Cooking —

Water

Quantity needed for health — a little over
Adult, average, ½ pound ounce for each
pound of his weight. 140 pound
70 to 90 ounces daily: — 20 or 30
in solid form — the rest drunk
as liquid — Variable, how —
In great exertion, much more —
For clothes (of person & clothes) —
For cleansing, as well as drink &
cooking — 16 gallons per head —
For beverage, 9 gallons more;
in all 25 to 30 gallons per
head daily. Public baths of
ancient Rome 300 gallons per head.
For Hospitals, more than in private
for more baths & washing; 40 or 50 gall. per h.

Kinds of Waters:

1 Distilled –

7 Melted Ice

Melted Snow

2 Rain waters

3 Spring – ordinary & Mineral –

4 Well – common
– artesian – (Hard waters)
(Filtration)

5 River

6 Lake

Marsh

Sea.

Ice melted, pure but flat
~~Snow water~~
preserved by freezing, a considerable part of
the air & salts,
~~So melted ice~~

Snow water contains salts, but
not as much less ammonia than rain water
Long thought unwholesome.

Certainly bad in Northern Europe,
from habits of people.

Spring, well & river waters.

(Refer to Rivers, Course about Mineral
waters, origin of springs, &c —)

Important pure water supply, especially
to large cities London, from Wales proposed —
Reservoirs — abundance
as well as good quality
Schuylkill water in summer — Propag. of cholera

Kinds of Water

2 Rain-water — (Distilled water) no salts — flat — At sea — cask with holes & charcoal

aerated — oxygenated — carbonated

dec with Carb. ammon.
Nitric acid, espec. in summer
Nits. ammon espec. after storms
Sulphurous
Sulphuric acid { ore coal. burnt cities —
Phosphoric
Chlorohydric acid
Sulph. hydrogen
Chlor. of sodium, potass, calc.
Carb. of lime
Sulph of lime
Iron, alumina, silica, phosph. of lime, carbon, pollen of flowers, spores of cryptog. plants, ~~animal~~ infusoria & ova — &c

Nitrogenous organic matter very common
Purer in country than towns. [Root where wells & bad. Sometimes in chalk ?

No. | NAME. | RECITATION. | RECITATION. | RECITATION. | Av. | Neg.

Artesian Well waters — various — sometimes too saline to drink. — alkaline at Granelle — iron in others — warm accord not much acid — Sometimes 80° F.

Marsh waters — much veg matter — 12 to 40 or 50 gr to gallon. Salts varieth. It is unwholesome Chuckahominy — Jelsonkee —

Waters from Graveyard — nitrates Nitrites of ammonia Clinic — fatty acids, much organic matter Normil well (do) 10.37 gr per gallon — Iron factories — maybe various kinds arsenic from color printing Gas-works — slaughterhouses — glue factories — bone dust works — dye houses &c

186

186

o.	NAME.	Recitation.		Recitation.		Recitation.		Recitation.		Av.	Neg.	Ab.

RECITATION.

Av. Neg. Ab.

186

River water, deep pure

well or spring

Lake, large, fair, salt, fresh,

Sea water undrinkable,

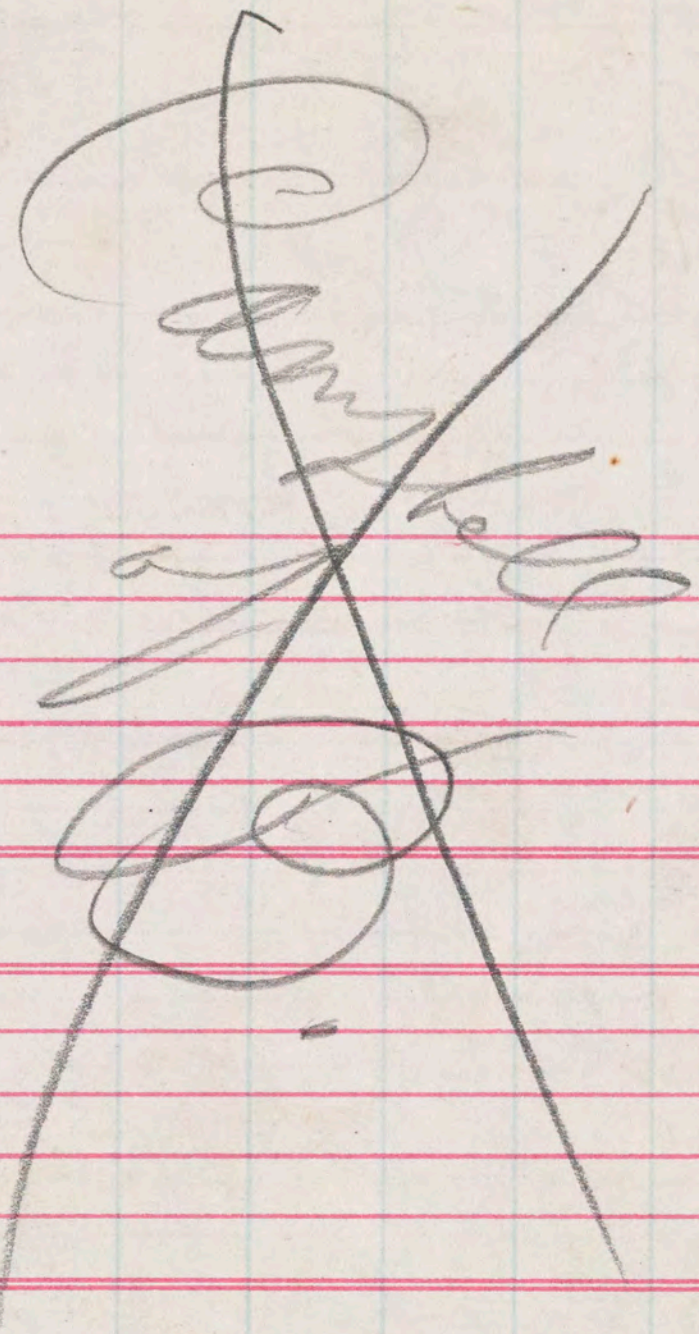
No.	NAME.	RECIT

Contents of River Water.

1. Gases:— Air— Oxygen, Nitrogen, Carbonic acid
Sulphuretted Hydrogen, Carburetted Hydrogen

2. Organic matter:— Humin, Ulmin, Humic & Ulmic acids, Crenic acid, & complex vegetable animal matters.
Glairine, Zoogene,

3. Mineral substances: Chloride of Sodium, sulphate of soda, carbonate of soda, carbonate of lime, sulphate of lime, chloride, silicate of calcium, carbonate of magnesia, &c.



Suspended matters in rivers.

Ganges, Summer months 194 parts
in 100000

Mississippi, annual mean 80 to 59 "

Rhone 1.73 to 20 "

Rivers must be taken somewhere
but Drinkable — good —

Habitation makes it agreeable.

water may be colored from peat, or old forests
Stagnant water — colored not very unwholesome
Can don't decide — Nor taste —
Nor smell till kept (Schuylkill water)
Touch in washing — Hard waters don't
lather well with soap Soap test

Microscopic examination

staff!

Parts of veg. & animal tissues

Infusoria, esp. of paramecium

Diatoms any veg. organisms

water flea & other articulata

worms — (Schuylkill specimens
Rotifers in Napoleon campus Egypt
Nematoids occasional) — 6 in 1/2 fl.
Polycistina Bilharzia Hematobia — Kidney worm

Do other worms animals

or stream parts of —

Tests — for organic matter
permanganate of potassa, acid, gold
for lime — ox. ammon
for chlorin — nit. silver
total solids, evaporation
Earth salts — soap-test (latter)

Removable hardness & permanent hardness
Boiling (CO2 off) worst water softening

NAME. RECITATION. RECITATION. RECITATION. NO.

Good drinking water: (1) Per Gallon.

Organic matter, not above 1.5 grains

Carbonate of lime 16.0

Sulphate " 3.0

Carbonate Sulphate of Magnesia } 3.0

Chloride of Sodium 10.0

Carbonate of soda, Potassa 20.0

Sulphate of soda Potassa 6.0

Iron Iodine, Bromine 0.5

Total solids not above 35 grains per gallon.

Gases: Nitrogen 6 cubic inches per gallon

Oxygen 2.5 "

Carbonic acid 5 to 7 "

(1) Pure water is a rare thing in nature. Rain water is the purest, but it is liable to contain impurities from the air. Spring water is generally pure, but it is liable to contain impurities from the soil. River water is generally impure, but it is liable to contain impurities from the soil and from the air. Well water is generally impure, but it is liable to contain impurities from the soil and from the air. Lake water is generally impure, but it is liable to contain impurities from the soil and from the air. Ocean water is generally impure, but it is liable to contain impurities from the soil and from the air. Distilled water is generally pure, but it is liable to contain impurities from the air. Boiled water is generally pure, but it is liable to contain impurities from the air. Filtered water is generally pure, but it is liable to contain impurities from the air. Aerated water is generally pure, but it is liable to contain impurities from the air. Mineral water is generally impure, but it is liable to contain impurities from the soil and from the air. Sea water is generally impure, but it is liable to contain impurities from the soil and from the air. Rain water is generally pure, but it is liable to contain impurities from the air. Spring water is generally pure, but it is liable to contain impurities from the soil. River water is generally impure, but it is liable to contain impurities from the soil and from the air. Well water is generally impure, but it is liable to contain impurities from the soil and from the air. Lake water is generally impure, but it is liable to contain impurities from the soil and from the air. Ocean water is generally impure, but it is liable to contain impurities from the soil and from the air. Distilled water is generally pure, but it is liable to contain impurities from the air. Boiled water is generally pure, but it is liable to contain impurities from the air. Filtered water is generally pure, but it is liable to contain impurities from the air. Aerated water is generally pure, but it is liable to contain impurities from the air. Mineral water is generally impure, but it is liable to contain impurities from the soil and from the air. Sea water is generally impure, but it is liable to contain impurities from the soil and from the air.

1866

ATION.		RECITATION.		RECITATION.		RECITATION.		Av.	Neg.

Fixed matters never should exceed 1/500 — 1/1000

and — bicarb. lime, alkaline chlorides, sulphates, bromides, magnesia, alumina, silica & oxide of iron — may enter into excellent drinking waters.

Boiling hard water Becquerel says deposits the lime by driving off the carbonic acid which had dissolved it.

Purifica. of Water

1. Passing thro' porous Stone; a
fine Sponge
removes sulphydrogen, &
much organic matter

2. Boiling Deposites — nds is
of Carb. Lime, iron, & above

3. Alum addition — 6 gr. per gallon
throws down most suspended
matters — give it 24 hours —

3½. Tinct. Chlor. Iron followed by Carb. Sodium.

4. Lime water — throws down carbonic
and & carbonate of Calcium — not sulph
chlor of lime Draupers

5. Permang. Potas. (Condy's fluid)
destroys organic matter —

6. Boiling with astringents containg tannin

7. Pieces of charcoal, Charring Casks.

Filtration

Gravel — Sand — Charcoal

& alternators —

Charcoal best — Animal especially

— thick & closely pressed —

Effect part Mechanical

chiefly chemical — oxidation —

Organisms — 9 layers of sponges, pounded

Sandstone, gravel

another — diaphragms of wool

boiled in alum Layers of cotton, dyed

in infusion of galls Washed in sol

of soda

magnetic carbide

Egyptian goolah — (alcarazza Span)

Carferal

Glass-lined ✓

2 Rubber lined pipes:

the Cells only ✓ cold.

Reservoirs

Of Carpenter Masonry—

Soil, slate, stone or cement—

Iron, lead ~~never~~ ? — Zinc not desirable —

Covers always, protect

from heat, light

(Take off plants ? Protococcus, nostoc, chara, oedze; certain duckweeds water and

allow no communication with

sewers for drainage; let overflows pipes

stop clear — & drain pipes

empty thro' gratig above ground —

for fear of gases —

Distribution — Block tin (not Glass-lined)

Iron & Lead —

Zinc not much

Lead — 1/100 — 1/10th danger —

7/10ths Louis Philippe

1/40 Edinb. — safe — living at Claremont

— Lining with tin — good —

Carbo-lead coats safeguard

& those with organic matter. Arsenical metals for glass

Pure water dissolves tin & zinc & other metal fittings those.

Effects of Impure Waters —

From

Animal organic matter, especially of
fecal origin: or from slaughter-houses, &c.
vegetable organic matter, from marshes.

Certain salts — as sulphates of lime & magnesia, chloride of calcium & magnesium, nitrates & nitrites, & butyrate of lime.

Less injurious, carb. soda, chlor sodium & carbonate of lime.

Dyspepsia — Alkalies & lime salts

Diarrhoea — Lime salts, Magnesia, Missouri, Red River, Red Sand Creek, Kansas — Ranges — & many other rivers

Organic matter sometimes 10 or 15 ppm. in pollutant bad effects

Unwholesome shallow wells / London (Lithia) other kinds organic impurities. Phila. pump-water.

Drinking wells.

Public

Water places

in the country

Impure water continued

Sulphurous water causes

Diarrhoea — In Mexican war

1861-62 — French troops at Orizaba.

U.S. army in Virginia, late war —

Absorption of Perm gases will

cause Diarrhoea —

National Hotel at Moorfields 1857.

Cases recorded by Dr Greenhow in Times

Report of Health of London

Dissolved mineral matters in spring

will cause Diarrhoea — often.

Ohio both North states, with strangers.

a little hard in it patients —

Brackish water near sea, diarrhoea.

At Cape Many often so —

Dysentery sometimes by fresh causes: Wilson

E. Andrew

Typhus fever

Cholera

Impure Waters

Malarial disease & cases

Once — case of Argo, (Boudin)

3 ships had 800 soldiers from Algiers

to Marseilles — all well on

2 — Argo, the third, 120 men, had

111 cases of paludal fever; only fifty

the Argo water from a Marsh

Unique (case)

Typhoid Fever

Cholera Fever (Boudin)

Yellow

Impure Waters

Disease of Skin

Boils; over near Frankfort

1868 — Chemical cranks, pulp

hydrogen gas & water

Hard water makes horses' coats

rough — &

Calculi —

Russia — normal Norfolk England

— Kentucky — Water?

Goitre

Cure Iodine in stem

with exclusion of Light & dampness

& Bilharzia Hematobia

Akdrop Worm Egypt cap 19th

Filaria Dracunculus or Guinea-worm

Filtration

Boiling

protective.

Condiments:

Pepper

Black &

Red.

Mustard

White &

Black

Spices.